

Serial Number 09/808,055

AMENDMENTS TO DRAWINGS

Please amend Fig. 1 by adding the label –Prior Art–, as indicated on the attached SUBSTITUTE SHEET.

REMARKS

Reconsideration of the application is respectfully requested for the following reasons:

1. Objection to Drawings

This objection has been addressed by amending Fig. 1 to include the label –Prior Art–, as required in item 2 on page 2 of the Official Action.

2. Rejection of Claims 1 and 2 Under 35 USC §102(b) in view of U.S. Patent No. 4,672,674 (Clough)

This rejection is respectfully traversed on the grounds that the Clough patent neither discloses nor suggests an active noise cancellation method that utilizes independent component analysis to obtain components of a primary input of an active noise cancellation system which are independent of the noise components. Instead of the claimed **independent component analysis** of a mixture of signal and noise at the primary input, which takes into account secondary or higher statistical characteristics of noise components of a secondary input at the output end of the active noise cancellation system, the noise cancellation system of Clough uses a least mean square algorithm to approximate an ideal source signal, in exactly the same manner as the system illustrated in Fig. 1 of the present application. The least mean square algorithm provides only a first order approximation of the desired output.

In contrast, according to the claimed invention, mixtures of the source signal and noise are independently analyzed. For example, the independent component analysis may be accomplished by analyzing the secondary input at the output end to obtain an invertible matrix that can be used to recover the source signal. As a result of this “independent component analysis,” the claimed invention makes it possible to obtain a more detailed analysis of the effect of the noise on the source signal, and thereby more effectively cancel the noise. The Clough patent does not teach such analysis, but rather teaches nothing more than the prior art illustrated in Fig. 1.

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Because the Clough patent merely teaches the prior art illustrated in Fig. 1, and does not teach any sort of independent component analysis, much less one which utilizes independent component analysis of a mixture of signal and noise taking into account noise components at a secondary input, as claimed, it is respectfully submitted that the Clough patent does not anticipate the claimed invention and withdrawal of the rejection of claims 1 and 2 under 35 USC §102(b) is respectfully requested.

3. Rejection of Claims 1-4 Under 35 USC §102(b) in view of U.S. Patent No. 6,151,397 (Jackson)

This rejection is respectfully traversed on the grounds that the Jackson patent, like the Clough patent, neither discloses nor suggests an active noise cancellation method that utilizes independent component analysis to obtain components of a primary input of an active noise cancellation system which are independent of the noise components.


While the Jackson patent does use a type of independent component analysis, based on “blind source separation” of at least two distinct composite signals, Jackson multiplies the mixed signal “*by a series of different weights associated with a series of different delays*” (col. 10, lines 16-20) to obtain the components of the primary input. This is not the same as taking into account secondary or higher statistical characteristics of the noise components forming a secondary input at an output end of the active noise cancellation system, as claimed. As a result, it is respectfully submitted that the Jackson patent does not anticipate the claimed invention, but rather is alternative thereto, and therefore withdrawal of the rejection of claims 1-4 under 35 USC §102(b) in view of the Jackson patent is respectfully requested.

Having thus overcome each of the objections and rejections made in the Official Action, expedited passage of the application to issue is requested.

Respectfully submitted,

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